

coating". This means that a surface, typically a cylindrical surface, is machined or otherwise modified to have high areas and low areas, whereby it is no longer a single cylindrical surface. Following this material removal, all areas (both the high areas and the low areas) are coated with a ceramic layer by thermal flame spraying. The coating on the high areas will accordingly form the friction surfaces which contact the paper during a folding operation.

According to claim 1, each folding roll of a folding apparatus comprises "at least one cylindrical surface having at least one frictional area to which a layer of friction material has been applied by thermal spray coating, said at least one frictional area being bounded by areas on said cylindrical surface to which no friction material has been applied." Independent claim 17 recites a folding roll which is identically limited.

Since AAPA does not include any parts of a cylindrical surface to which no friction material has been applied, it cannot anticipate claims 1 and 17. There is no basis for the examiner's statement that AAPA includes areas on the cylindrical surface [to which friction material has been applied] with no friction coating.

Claims 1 and 17 also stand rejected under 35 U.S.C. §102(b) as being anticipated by either of Weatherhead US 4,917,283 or Tebbe US 5,048,809. This rejection is traversed for the reasons following.

Weatherhead discloses a feed roller having a cylindrical surface in which grooves 22 separated by teeth 20 are formed, followed by covering the grooved surface with rubber 30, followed by cutting the surface to remove the tops of the teeth. See Figure 5. There is no cylindrical surface to which no friction material is applied, much less areas of the cylindrical surface [to which friction material has been applied] with no friction coating. So this reference cannot anticipate claims 1 or 17.

Tebbe in Fig. 17 shows a roll 92 from which material has been removed to form grooves 94 and 96, following by wrapping with PTFE tape, which is chosen for its low friction characteristics. Even assuming that PTFE is considered a friction material, which it certainly is not, there is no cylindrical surface to which no friction material is applied, much less areas of the cylindrical surface [to which friction material has been applied] with no friction coating. So this reference cannot anticipate claims 1 or 17.

The examiner points out that the recitation of a layer of frictional material being applied by thermal spray coating amounts to a product-by-process limitation. Applicants do not take issue with this statement, but posit that the process limitation in this case represents a valid structural limitation.

The leading cases in this area include *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), and *In re Pilkington*, 162 USPQ 145, 147 (CCPA 1969). These cases explain when a “product-by-process” claim is patentable. Basically, in order to be patentable, the product must have structural characteristics that distinguish it from the prior art. It cannot be the same as or obvious from the prior art product. In *Thorpe*, the product, though made by a different process, was no different than the product made by a prior art process. Thus, the claims were held to be unpatentable. In *Pilkington*, on the other hand, the product (plate glass manufactured on a bed of molten metal), the claims were found to be patentable because the glass itself was different from the prior art plate glass made with rollers. This is the seminal case on product-by-process claims, and is still good law.

Product-by-process claims are useful when the process of manufacture imparts unique and useful characteristics to a product, but there is no easy way to describe those characteristics besides referring to the manufacturing process. Such was the case in *Pilkington*, and such is the

case here. The flame spraying process produces a frictional layer having properties which readily identify it as having been flame sprayed. The spraying process is useful because it can be applied through a mask, resulting in any desired pattern, and further because it produces a desired high roughness which makes it suitable as a friction surface for a moving paper web.

Neither Weatherhead nor Tebbe discloses a friction coating which is flame sprayed. Likewise, the coatings do not have the physical characteristics of flame sprayed coatings. The rubber of Weatherhead relies on the coefficient of friction of the rubber between the hard metal teeth for traction against a paper web, and the PTFE tape of Tebbe is not even intended to provide traction. On the contrary, since it is intended to have very low friction, Tebbe *teaches away* from a flame sprayed coating.

Thus, even though applicants' claims 1 and 17 define over these references without the "flame spraying" limitation, this limitation represents structure which defines still further over the cited references.

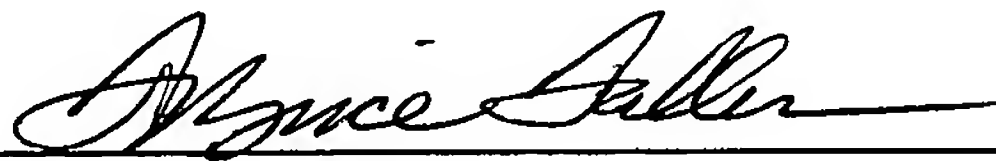
Since independent claims 1 and 17 are clearly patentable over AAPA and the prior art cited by the examiner, it is not deemed necessary to address the rejection of the dependent claims under 35 USC 103 citing AAPA at this time.

The claims being definite and clearly patentable over the art of record, withdrawal of the rejections and early allowance are solicited. If any objections remain, a call to the undersigned is requested.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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